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RESEARCH

Mental Health and Juvenile Justice

An Impact Evaluation of a Community-Based Intervention in Queens, New York

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August 2013

ACKNOWLEDGEMENTS

We thank Kelli Henry for launching and implementing this research at earlier stages. We thank Mike Rempel, Warren Reich, and Carol Fisler for their collaboration, expertise, and constructive edits throughout the impact evaluation. We also thank Alfred Siegel and Greg Berman for their careful review and feedback on earlier drafts of this manuscript. We wish to thank project partners at the New York City Mayor's Office of the Criminal Justice Coordinator, especially Michele Sviridoff, Gerald Foley, and Miriam Popper, as well as the Vera Institute of Justice, including Jennifer Fratello, Jennifer Jensen, and Nicolas Wical, for their partnership and instrumental support. Finally, we wish to recognize and thank the staff and leadership of QUEST Futures, QUEST ATD, Choices Unlimited and its parent agency, the Center for Community Alternatives, and Project Ready for their dedicated work, as well as their collaboration, generosity and willingness to be a part of this evaluation. We would also like to thank the Department of Health and Mental Hygiene for their support of the program. This study was approved by the Center for Court Innovation Institutional Review Board. This research was made possible by the Jacob and Valeria Langeloth Foundation, Pinkerton Foundation, Bernard F. and Alva B. Gimbel Foundation, van Ameringen Foundation, Achelis & Bodman Foundations, and the Viola W. Bernard Foundation.

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EXECUTIVE SUMMARY

In October 2008, QUEST Futures was launched by the Center for Court Innovation, in collaboration with the New York City Office of the Criminal Justice Coordinator, the Queens Family Court, the New York City Departments of Law, Health and Mental Hygiene, and Probation, The Legal Aid Society, and other citywide juvenile justice and mental health agencies. QUEST Futures is a comprehensive intervention designed to reduce recidivism by engaging justice-involved youth and their families with mental health treatment and other services. The intervention works in conjunction with an alternative-to-detention (ATD) program, Queens Engagement Strategies for Teens (QUEST), which provides community supervision and afterschool programming for youths with juvenile delinquency cases in the Queens Family Court. QUEST participants are screened for mental health concerns, and those with a qualifying disorder are eligible to participate in QUEST Futures.

This study assesses the impact of QUEST Futures on recidivism, warrants issued for failure to appear in court, days spent in detention, and juvenile delinquency case outcomes. A companion process evaluation was previously published in 2012.

Design and Methodology

Baseline data were collected from two groups of alternative-to-detention (ATD) participants in New York City. The treatment group consisted of 131 QUEST Futures participants, who were referred through the QUEST ATD program from October 2008 through June 2011. The comparison group consisted of 261 youths participating in the following three ATD programs:

- Queens: QUEST participants (N = 21) enrolled in the nine months prior to the QUEST Futures launch, from January 2008 through September 2008;
- Brooklyn: Choices Unlimited participants (N = 179) enrolled from January 2009 through June 2011; and
- Staten Island: Project READY participants (N = 61) enrolled from June 2009 through June 2011.

All youths in the impact study flagged for a mental health concern, and most (91.3%) were classified as low- to moderate-risk of re-arrest or failure to appear in court. (The intended target population for New York City's ATD programs is moderate-risk youth.)

All study participants were screened using the validated Diagnostic Predictive Scales, a brief instrument that flags for 18 mental health disorders (*e.g.*, suicidal ideation, mania, post-traumatic stress disorder, and substance abuse) and the need for further clinical evaluation. A small subset of youths (N = 9) in the final sample from the QUEST program were screened using the validated Massachusetts Youth Screening Instrument, another brief mental health instrument for youth that is widely used in juvenile justice settings. Additional baseline and outcome data was obtained from the Juvenile Justice Database, a citywide database for juvenile delinquency cases.

Researchers used propensity score adjustments to correct for baseline sample differences between the treatment and comparison groups. Additional analyses were conducted to ensure

that results were not attributable to potential differences by borough (since Queens, Brooklyn, and Staten Island may process cases differently). Besides examining the impact of QUEST Futures participation, researchers also employed multivariable regression analyses to test for other baseline youth characteristics that might influence recidivism, detention, or other outcomes. A brief summary of key findings follows. Outcome data was collected over a one-year tracking period for all study participants.

Major Findings

- **Recidivism**: One year after ATD enrollment, QUEST Futures participants averaged significantly *fewer* total re-arrests (0.59 vs. 0.91) and felony re-arrests (0.24 vs. 0.50) than the comparison group. QUEST Futures participants were also significantly *less* likely to have at least one felony re-arrest (20% vs. 32%). Other factors significantly associated with re-arrest included screening for substance abuse (*e.g.*, alcohol, marijuana or any other substance use disorder) *or* screening for Oppositional Defiant Disorder (ODD). Youth who screened for suicidal ideation were significantly *less* likely than others to be re-arrested.

- **Juvenile Delinquency Case Outcomes**: QUEST Futures participants were significantly *less* likely than the comparison group to receive a community-based probation disposition sentence (25% vs. 52%) but significantly *more* likely to receive other community-based dispositions like adjournment in contemplation of dismissal, conditional discharge, and dismissal (54% vs. 34%).

- **Detention Days**: Following ATD program enrollment, QUEST Futures participants were no more or less likely to be detained than the comparison group but, once detained, averaged significantly more days in detention (34.35 vs. 28.43). This could indicate that judges are more aware of the complex service needs of the QUEST Futures youth, leading them to be less quickly released back into the community until appropriate services are in place. Other factors significantly associated with more days spent in detention after ATD enrollment included completing fewer grades in school, screening for ODD, screening for suicidal ideation, or if the youth had spent any time in detention before enrollment in the ATD program.

Chapter 1: Introduction

Studies show that as many as two-thirds of youths in the juvenile justice system experience mental health disorders (Shufelt & Cocozza, 2006; Teplin et al., 2002), compared to less than one-quarter of youths in the general population (Shaffer et al., 2010). The prevalence of mental disorders has largely been studied among justice-involved youths who are held in detention facilities. However, a recent study of youths under community supervision in New York City also detected elevated rates of mental health symptoms, finding that over half of the sample (50.9%) flagged for at least one mental health issue, while over a third (36.5%) flagged for two or more (Reich, 2013). Despite a clear need for mental health treatment and services, many juvenile justice systems lack appropriate community-based services and often send youths to detention as a default response (U.S. House of Representatives, 2004). Equally troubling, many systems lack the capacity to screen and identify the mental health needs of the population throughout all stages of juvenile case processing, from arrest to intake to adjudication to reentry (Cocozza & Shufelt, 2006; Wasserman et al., 2010).

QUEST Futures was launched in October 2008. Based in Queens, New York, QUEST Futures was implemented by the Center for Court Innovation, in collaboration with in the New York City Office of the Criminal Justice Coordinator, the Queens Family Court, the New York City Departments of Law, Health and Mental Hygiene, and Probation, The Legal Aid Society, and other citywide juvenile justice and mental health agencies. The goal of QUEST Futures is to reduce repeat offending by young people (15 years and younger) with mental health concerns in the juvenile justice system through the following objectives:

1. To screen young people for mental health problems in the early stages of court proceedings (*e.g.*, pre-adjudication);
2. To increase the juvenile justice system's capacity for alternatives to confinement; and
3. To engage young people and their families in effective community-based mental health services.

QUEST Futures works in conjunction with an alternative-to-detention (ATD) program, Queens Engagement Strategies for Teens (QUEST), which provides community supervision and afterschool programming for youths with pending juvenile delinquency cases in the Queens Family Court. QUEST participants are screened for mental health concerns, and those with a qualifying mental disorder are eligible to participate in QUEST Futures as well. For an expansive discussion of the QUEST Futures model and an overview of alternative-to-detention programs in New York City, see the completed process evaluation of QUEST Futures (see Henry, 2012).

Program Eligibility

Eligibility for QUEST Futures extends to youths who are 15 years or younger at the time of arrest for juvenile delinquency where cases are pending in the Queens Family Court. The youths can be classified as low-, moderate-, or high-risk on a Risk Assessment Instrument (RAI; Fratello, Salsich, & Mogulescu, 2011) administered by the Department of Probation at post-arrest intake; most youths in this study were classified as low- or moderate-risk. Youths who are charged with the following offenses are not likely to be considered for the program (except under

individual case review): homicides, armed robbery, gun-related, assault or other offenses causing serious injury or death, sex crimes, and arson.

Clinical eligibility criteria include youths who screen for at least one mental health disorder (DSM-IV or ICD-9-CM) and have met criteria for functional impairment.[1] In addition, youths are required to have parental consent to participate in the program and support throughout program engagement of at least one parent, legal guardian or other primary adult caregiver.

Referral, Screening, and Assessment

Participants in QUEST Futures enroll through either a judicial mandate or a voluntary referral (described further below). QUEST Futures staff then determines the youth's eligibility for program participation. A judicial mandate is court-ordered participation in QUEST Futures alone, or, if deemed necessary, in combination with other ATD programming. Voluntary referrals are made by the following sources:

1. The QUEST ATD program, the largest referral source (73% of referrals through September 2010, see Henry 2012);
2. The Department of Probation, usually at pre-adjudication.[2]
3. Attorneys for the children (defense attorneys, also referred to as law guardians).[3]
4. Parents/guardians of youth.

At intake, the Project Director or Clinical Director (a licensed clinical social worker) meets with the youth and parent/guardian to introduce the program, answer questions, and obtain consent from both youth and parent/guardian. All participants of the QUEST ATD program are administered the Diagnostic Predictive Scales (DPS; described further in Chapter 2). If a youth flags on the DPS for a mental health disorder and meets criteria for impairment, then the youth is referred to QUEST Futures for a full biopsychosocial assessment.[4] The assessment occurs within three days of intake and will only occur with the consent of the parent or guardian. The assessment may be supplemented by information from home visits, interviews with the youth's support system (*e.g.,* family members and teachers), a full psychiatric evaluation, and records and interviews regarding any past or current treatment. If a youth is screened for suicide risk, then the Clinical Director or case manager conducts an in-depth assessment to determine the youth's immediate needs, prioritizing safety.

[1] Of note, youth with one or more qualifying mental disorders who *also* have substance abuse disorders, learning disorders or borderline intellectual functioning are still eligible to participate. Youth who have substance use disorders, learning disorder, or borderline intellectual functioning but do not also have a qualifying mental health disorder are generally *not* eligible for QUEST Futures.

[2] In June 2010, QUEST Futures began accepting post-adjudication referrals from the Department of Probation, but this only applied to six youth in this study.

[3] In March 2009, QUEST Futures began accepting referrals from law guardians and youths' parents and guardians, but this did not apply to any youth in this study.

[4] The biopsychosocial assessment is an in-depth interview that includes questions about the youth (*e.g.,* age, sex, race/ethnicity, primary language); family (*e.g.,* parents' marital status, siblings, other family and household members, major family stresses, and family responses to the youth); school (*e.g.,* past and current academic performance); employment/socialization (*e.g.,* work history and performance, relationships with family, peers, and the community); and health (*e.g.,* medical history and insurance information).

QUEST Futures Program

Program staff works with both youth and their families to build trust and collaborate on service planning and youth engagement throughout the length of the program. Among participants in the study (N = 104),[5] the average program length among QUEST Futures participants was 10.7 months. Using an intensive case management approach, program staff works with youths and families to address mental health and other complex needs. Based on the full assessment, case managers develop individualized treatment plans for youths that may include on-site and community-based services.

On-site services include individual and group psychoeducational sessions with youth covering topics such as depression, suicide, emotional intelligence, coping skills, and consequential thinking, and support groups for parents and other family members covering topics such as adolescent development, gang awareness, and substance abuse awareness. Community-based service linkages include the following: treatment services such as individual or family therapy, full evaluation consultations, and inpatient or outpatient substance abuse treatment; entitlements for families, including referrals to Single Stop for public assistance, food stamps, as well as additional family services like child care and parenting services like Nurse Family Partnerships and Visiting Nurse Service; education and employment-related services like expedited Individualized Education Program review and referrals like transfer schools, residential schools, GED programs, job training, and internships and employment referrals.

Case managers link youths and families to community-based behavioral health providers and other services and monitor their progress in weekly contacts with service providers. Monitoring includes tracking attendance and engagement at treatment sessions, school, and other services, as well as reporting to the court. With its open-door policy, QUEST Futures staff are also available to provide additional support to youths and their families on a daily basis. QUEST Futures staff remain involved with youths and families for as long as the delinquency case is pending and while a young person is on probation. Voluntary services can continue for up to 60 days after juvenile justice system has ended, based on the youth's and family's interest in continuing in the program.

QUEST Futures Staff and Stakeholders

Program staff consists of a multidisciplinary team that includes the Project Director, the Clinical Director, masters-level case managers, youth developers, a court liaison, and a consulting psychiatrist. QUEST Futures also relies on key partnerships, including: Queens Family Court judges; attorneys for respondents (*e.g.*, private and court-appointed attorneys, including The Legal Aid Society who served as defense counsel); attorneys from the New York City Law Department, as the presentment (or prosecution) agency; and probation officers from the Department of Probation.

[5] The smaller sample size is due to missing data.

Chapter 2: Sample and Methods

Treatment and Comparison Samples

Data were collected from youths under community supervision (N = 392), representing a subset of youths from a larger prevalence study examining the mental disorders of alternative-to-detention (ATD) participants in Queens, Brooklyn, and Staten Island (see Reich, 2013). In the impact study sample, all youths flagged for mental health symptoms, and most (91.3%) were classified as low-to moderate-risk of re-arrest or failure to appear in court. The treatment group consisted of 131 QUEST Futures participants enrolled from October 2008 through June 2011, of whom 100 were voluntary and 31 were mandated to the program. The comparison group was pooled from the following three subsamples:[6]

1. Queens: 21 youths participating in the QUEST ATD program prior to the QUEST Futures program launch, enrolled from January 2008 through September 2008;
2. Brooklyn: 179 youths participating in the ATD program, Choices Unlimited,[7] enrolled from January 2009 through June 2011; and
3. Staten Island: 61 youths participating in the ATD program, Project READY (Richmond Engagement Strategies for Teens),[8] enrolled from June 2009 through June 2011.

Since the comparison group exclusively consisted of ATD program participants, the treatment group excluded approximately one-quarter of all QUEST Futures participants who were not also participating in the QUEST ATD program but who were referred to QUEST Futures through other mechanisms, including referrals by probation, attorneys, or families (see Henry, 2012).

Instruments

The following mental health instruments were used for screening. For 9 of the 21 youths engaged in the QUEST ATD comparison group, the validated Massachusetts Youth Screening Instrument (MAYSI-2) was used. The MAYSI-2 is a brief pencil and paper instrument that is designed to screen 12- to 17-year-old youths in juvenile justice settings, for a range of mental health symptoms (Grisso & Barnum, 2003, 2006).[9]

[6] The Center for Court Innovation runs the QUEST ATD program and QUEST Futures, as well as Project READY in Staten Island, while the Brooklyn ATD program, Choices Unlimited, is run by the Center for Community Alternatives (CCA).

[7] Throughout the study period, the Center for Court Innovation stationed a social worker at Choice Unlimited to conduct brief clinical interviews of all young people who flagged for mental health issues on the Diagnostic Predictive Scales (DPS, described below) and offer families referrals to community-based services.

[8] Throughout the study period, a social worker at Project READY conducted biopsychosocial assessments of young people who flagged on the DPS, offered families referrals to community-based services, and provided limited case management services for the duration of the young people's enrollment in Project READY, a maximum of four months. During the second year of the study period, Project READY also offered a respite program based on Multidimensional Treatment Foster Care to a limited number of participants (Chamberlain & Mihalic, 1998; Fisher & Chamberlain, 2000), which placed participants with a trained foster family for up to 21 days and, following reunification with their parents or legal guardians, provided Functional Family Therapy (Alexander et al., 1998) or a comparable family intervention for four to six months. Eight of the Project READY participants, or 13% of the Staten Island comparison group, participated in the respite program.

[9] The MAYSI-2 screens for warning signs of the following: alcohol and drug use, anger/irritability, depression and anxiety, somatic complaints, suicide ideation, and thought disturbance.

The validated Diagnostic Predictive Scales (DPS; Lucas et al., 2001) replaced the MAYSI-2 in the summer of 2008, before QUEST Futures opened but after the QUEST comparison group recruitment was underway.[10] The DPS was used with all study participants, except for the 9 QUEST ATD comparison youths noted above. The DPS is a brief audio computer-assisted interview that screens youths, 9 to 18 years old, for mental health issues related to 18 diagnostic categories in the DSM-IV (see below). It also includes an overall symptom score as well as a global impairment scale that measures any difficulties in everyday functioning resulting from mental health symptoms. If a youth flagged on a specific disorder, in which symptoms were present at clinical levels and the total impairment score was 6 or higher, then these criteria would indicate the need for further clinical evaluation. Exceptions were immediate flags for suicide or substance abuse, where no minimum impairment scores were required. For additional information about the DPS in a study concerning the prevalence of mental disorders among ATD participants from the same three programs, see Reich (2013).

For the purposes of this study, DPS data was included, but mental health data for the 9 youth screened with the MAYSI-2 were excluded. This was done primarily because the MAYSI-2 data is not actually comparable to the DPS, as the MAYSI-2 captured general symptoms of depression, anxiety, and a small number of other problems, as opposed to a more specific diagnostic flag, as seen in the DPS for each of the 18 disorders.

All study participants were also screened using the Risk Assessment Instrument (RAI; Fratello, Salsich, & Mogulescu, 2011), which measures a youth's risk of re-arrest and failure to appear in court while a juvenile delinquency case is pending. The RAI is routinely administered by the Department of Probation shortly after a juvenile delinquency arrest in all five boroughs in New York City. The MAYSI-2 and DPS are administered by ATD program staff; QUEST Futures and Project Ready (the Staten Island ATD program) have used the DPS as a clinical tool in their program operations.

The following baseline and outcome measures were used in this study, including data obtained from the Juvenile Justice Database (JJDB), a citywide database for juvenile delinquency cases overseen by the NYC Office of the Criminal Justice Coordinator.

Summary of Measures

1. Sociodemographics

- Sex
- Age at ATD program enrollment
- Race/ethnicity
- School grade at ATD program enrollment
- Primary adult caregiver

[10] The replacement occurred because the DPS offered a greater specificity regarding disorders in diagnostic categories than the MAYSI-2. (An initial plan to supplement the MAYSI-2 with the Voice Diagnostic Interview Schedule for Children-IV (V-DISC) was replaced with a final protocol to use the DPS alone.)

2. *Initial Criminal Justice Information*
    - Overall risk classification from RAI (low-, moderate-, high-risk)
    - Risk of failure to appear (subscale of the RAI)
    - Risk of re-arrest (subscale of the RAI)
    - Initial charge type (*e.g.*, drug-related, weapons-related)
    - Initial charge severity (misdemeanor or felony)
3. *Mental Health Information from the Diagnostic Predictive Scales*
    - Attention deficit hyperactivity disorder (ADHD)
    - Agoraphobia
    - Conduct disorder
    - Eating disorder
    - Generalized anxiety disorder (GAD)
    - Mania
    - Major depressive disorder (MDD)
    - Obsessive compulsive disorder (OCD)
    - Oppositional defiant disorder (ODD
    - Panic disorder
    - Post-traumatic stress (PTSD)
    - Separation anxiety
    - Social phobia
    - Specific phobia
    - Suicidal ideation
    - Substance-related disorders: alcohol abuse, marijuana abuse, any other substance abuse, and any substance abuse (all substance use disorders in combination).
    - Total symptom score
    - Total impairment score
    - More than one disorder
4. *Outcomes*
    a. Recidivism
        - <u>One Year after Arraignment</u>:[11]
            - Any and average number of re-arrests
            - Any and average number of felony re-arrests
            - Any and average number of violent re-arrests[12]
            - Any and average number of violent felony re-arrests[13]

[11] Arraignment is essentially equivalent or approximate to ATD enrollment date for most ATD participants. Slightly less than 20% of the ATD participants in Queens and Brooklyn enroll in the ATD program after participating in a community supervision program run by the Department of Probation.

[12] Violent re-arrests include felonies classified as violent in the New York State Penal Law (examples of which are listed below in Note 12 below) and and misdemeanors involving offenses against the person, including: assault in the 3rd degree, reckless endangerment in the 2nd degree, menacing in the 2nd degree, criminal possession of a weapon in the 4th degree, sexual abuse in the 2nd degree, sexual misconduct, and forcible touching.

[13] Violent felonies are those classified as such in the New York State Penal Law. Examples include: assault in the 2nd degree, robbery in the 1st, 2nd, and 3rd degree, reckless endangerment in the 1st degree, menacing in the 1st degree, criminal possession of a weapon in the 2nd and 3rd degree, and sexual abuse in the 1st degree.

- One Year after Disposition:[14]
    - Any and average number of re-arrests
    - Any and average number of felony re-arrests
    - Any and average number of violent re-arrests[12]
    - Any and average number of violent felony re-arrests[13]

b. Warrants issued for failure to appear in court
c. Detention post-ATD program enrollment
    - Days spent in detention
    - Number of detention admissions
d. Juvenile delinquency case outcomes
    - Probation
    - Placement
    - All other community-based dispositions (*e.g.,* Adjournment in Contemplation of Dismissal, Conditional Discharge, Dismissed, or Miscellaneous[15]).

Propensity Score Matching

To reduce selection bias between the groups in the sample, as well as any potential differences by borough (*e.g.,* differences in youth characteristics or sentencing practices in Brooklyn, Queens, or Staten Island), we implemented a propensity score adjustment (Luellen, Shadish, & Clark 2005; Rosenbaum & Rubin, 1983, 1984; Rubin 1973). A propensity score (range: 0 to 1) was assigned to each participant based on the predicted probability that the youth falls into either the treatment group (*i.e.,* QUEST Futures) or the comparison group (*i.e.,* all other study participants). In order to calculate the best prediction of group assignment, propensity scores incorporated many baseline characteristics from the aforementioned measures to determine the individual's likelihood of being in one group or the other.

Propensity score modeling proceeded as follows. We first conducted bivariate comparisons between the treatment and comparison samples on all baseline characteristics. There were several statistically significant differences, as seen in race/ethnicity, risk level, risk of re-arrest, and initial charge type (see Table 2.1, left-hand columns). Among mental health characteristics, there were a greater number of significant differences, including the DPS overall symptom score, the impairment score, and DPS screens for mania, any substance abuse (*i.e.,* alcohol, marijuana, and any other substance abuse), OCD, ODD, specific phobia, and conduct disorder (See Table 2.2, left-hand columns). For the results of the bivariate analysis for propensity score adjustment (specific p-values for each comparison), see Appendix A.

To calculate the propensity score, we entered select baseline characteristics into a backward stepwise logistic regression, for which the dependent variable was group membership (0 = comparison, 1 = QUEST Futures). We included the independent variables, where the bivariate analysis yielded a p-value of .50 or less. Given this liberal inclusion criterion, the propensity score generated was most likely to balance differences between groups (Rosenbaum 2002; Rubin

[14] Disposition is essentially equivalent or approximate to ATD end date for approximately 70% of the participants. The remainder may spend several weeks or months in a community supervision program run by the Department of Probation or in detention before reaching case disposition.

[15] Miscellaneous dispositions include a withdrawn petition, being returned from placement, receiving an extension of probation supervision, or being transferred or removed to criminal court.

& Thomas 1996). For a small number of cases that were missing data for variables, the propensity scores were computed based on more limited models to omit any variables with missing data (Rosenbaum & Rubin 1984). We computed two models, where the first included all variables meeting the inclusion criterion, and the second included variables with complete data only. For a complete list of variables included in these models, see Appendix B. When reviewing the propensity scores generated from these two models, we deleted 13 QUEST Futures and 13 comparison cases, due to lack of common support. The final sample included 118 QUEST Futures and 248 comparison cases.

Next, we selected a propensity score adjustment method. Because of the relatively small sample size overall, and presence of only slightly more than double the number of comparison cases compared to QUEST Futures cases, we opted to retain as many cases as possible in the analysis rather than engage in propensity score matching, which requires deleting all unmatched comparison cases. Thus, we chose to use the propensity score as a single covariate in all impact analyses (Rosenbaum & Rubin 1983). Accordingly, although we report what appear as simple comparisons of means (*e.g.,* number of re-arrests), they are, in fact, adjusted means, computed for cases at the mean propensity score. In addition, the final analyses for detention outcomes also control for whether or not the youth was detained prior to the beginning of ATD participation, and the final analyses for juvenile delinquency case outcomes control for inherent borough-specific tendencies to use specific case dispositions (see further discussion below in the sub-section on sensitivity analyses). Descriptive findings are reported below, and impact findings are reported in the next chapter.

Final Sample Characteristics

Tables 2.1 and 2.2 present study participants' characteristics and differences between the QUEST Futures treatment and comparison groups. See right-hand columns for characteristics of the final sample.

As seen in Table 2.1, most participants were male (74.6% of the treatment group vs. 67.3% of the comparison group), and either black or Latino (85.6% of the treatment group vs. 79.4% of the comparison group). The average age among all youth was between 14 and 15 years old, and the average school grade attended at program enrollment was eighth grade. After propensity score adjustment, any mean differences were much smaller, and statistical significance for unadjusted models (*i.e.,* for race/ethnicity, overall risk score, and risk of re-arrest) dropped out.

As seen in Table 2.2, the most common DPS screens were for mania (39% among QUEST Futures youth and 41% among comparison group youth), posttraumatic stress disorder (PTSD; 33% and 35%), any substance abuse (31% and 33%), and Oppositional Defiant Disorder (ODD) (27% and 25%). For any significant differences in unadjusted models, the extent of the difference decreased and significance dropped out after propensity score adjustment. For example, the unadjusted difference in mania between groups was 16.9% ($p<.001$), while the adjusted difference was 2% ($p=.68$).

Plans for Multivariable Analysis

We conducted multivariable analysis to assess whether any independent variables (not limited to treatment status) were significantly associated with recidivism, case dispositions, warrants, and detention days. First, we used bivariate analyses to determine which covariates were correlated with each outcome and could be included in final models. These variables were: sex, grade level, risk score, felony charge at initial arrest, and DPS screens for any substance abuse, ODD, PTSD and suicide risk. For the detention outcome, we also included any detention served before ATD enrollment, because it was a significant predictor for this outcome only.

Next, we used general linearized models (GLM) to conduct multivariable regression for outcomes with non-normal distributions (Nelder & Wedderburn, 1972). For continuous outcomes (*e.g.*, number of detention days), we employed a negative binomial model, which is appropriate for count data where the outcome's variance estimate is greater than the mean. For dichotomous outcomes (*e.g.*, any re-arrest, any felony re-arrest, any probation, any placement, and any warrants issued), we used a binomial GLM model to account for outcome distributions that included only '0' or '1' values (*i.e.*, where '0' indicated no re-arrest occurred, and '1' indicated that re-arrest occurred).

In final models, we examined the impact of all covariates for each criminal justice outcome. Therefore, if sex was assumed to be a significant predictor of each outcome, we also included grade, DPS screens for any substance abuse, ODD, PTSD, and suicide risk, risk score, and felony charge at initial arrest, as potential confounders in adjusted models (Rothman et al., 2008). Key findings are reported in Chapter 3.

Table 2.1. Background Characteristics of Treatment and Comparison Group Participants

Variables	Unadjusted		Adjusted	
	QUEST Futures	Comparison group	QUEST Futures	Comparison group
	N = 131	N = 261	N = 118	N = 248
1. Sociodemographics				
Sex				
Male	75.6%	68.6%	72%	69%
Female	24.4%	31.4%	28%	31%
Age at Program Enrollment				
Average Age *(SE)*	14.5 (1.1)	14.4 (1.0)	14.5 (0.4)	14.4 (0.3)
Race/Ethnicity				
Black	52.7%*	59.9%	66%[a]	60%
Latino	28.2%**	19.6%	15%	17%
White	8.4%*	2.7%	2%	3%
Asian/Pacific Islander	8.4%**	1.9%	1%	1%
Other[b]	2.3%***	16.5%	1%	2%
Grade at program enrollment[c]				
Average Grade *(SE)*	8.5 (1.4)	8.6 (1.1)	8.6 (0.3)	8.7 (0.2)
Primary adult caregiver[d]				
Both parents	24.4%	17.9%	19%	19%
Mother only	53.4%+	62.7%	61%	61%
Father only	7.6%+	3.6%	4%	4%
Other family member or adult	14.5%	15.9%	16%	15%
2. Criminal Justice Information				
Risk level				
Low	47.3%***	27.6%	32%	31%
Moderate	46.6%**	62.5%	57%	59%
High	6.1%	10%	8%	7%
Risk of Failure to Appear[e]				
Low	97.7%	95.8%	97%	97%
Moderate	2.3%	4.2%	3%	3%
Risk of Re-arrest (SD)				
Low	64.9%***	46.4%	54%	52%
Moderate	29%**	43.7%	37%	40%
High	6.1%	10%	8%	7%
Initial Charge Type[f,g]				
Misconduct/minor offense[h]	4.3%	7.8%	6%	7%
Drug offense[i]	8.5%	6.6%	7%	6%
Weapons offense[j]	7.7%	4.3%	7%	5%

Variables	Unadjusted		Adjusted	
	QUEST Futures	Comparison group	QUEST Futures	Comparison group
Initial Charge Type cont.				
Burglary, theft, or other property offense[k]	29.9%	26.4%	29%	26%
Sex crimes[l]	1.7%	0.4%	0%	0%
Assault, robbery, or harm to persons[m]	47.9%	54.7%	51%	55%
Initial Charge Severity				
Misdemeanor[g]	53%	50.4%	52%	49%
Felony[g]	47%	49.6%	48%	51%
Violent Felony[g]	20.6%	20.3%	20%	20%

$^{+}$ p< 0.10, * $p < .05$, ** $p < .01$, *** $p < .001$.

[a] Please note that the percentages do not add up to 100, because these findings report only mean estimates from propensity score adjustment, not anomalies (*e.g.*, values that are much higher or lower than the mean).

[b] Other includes: Native American (2); Mixed race (26); Unknown (18).

[c] Unadjusted $N_{comparison}$=260; Adjusted $N_{comparison}$=247; [d] Unadjusted $N_{comparison}$=252; Adjusted $N_{comparison}$ = 239;

[e] In the total sample, there is no high risk of failure to appear.

[f] Unadjusted N_{Quest}=117; $N_{comparison}$=258; [g] Adjusted N_{Quest}=105; $N_{comparison}$=245

[h] Includes the following charges: prostitution; possession of graffiti instruments; obstruction of government administration in the 2nd degree; unlawful assembly; criminal mischief; criminal contempt in the 2nd degree; falsely reporting an incident in the 1st degree.

[i] Includes the following charges: criminal possession of a controlled substance in the 3rd and 7th degrees; criminal possession of marijuana in the 3rd and 4th degrees; criminal sale of a controlled substance in the 3rd degree.

[j] Includes the following charges: criminal possession of a weapon in the 2nd, 3rd, and 4th degrees.

[k] Includes the following charges: criminal possession of stolen property in the 4th and 5th degrees; grand larceny in the 3rd and 4th degrees; burglary in the 2nd and 3rd degrees.

[l] Includes the following charges: forcible touching; sexual abuse in the 1st and 2nd degree.

[m] Includes the following charges: menacing in the 2nd and 3rd degrees; assault in the 2nd and 3rd degrees; gang assault in the 3rd degree; robbery in the 1st, 2nd, and 3rd degrees.

Table 2.2. Positive Screens on Individual Disorders by Official DPS Criteria among Treatment and Comparison group participants

Variables	Unadjusted		Adjusted	
	QUEST Futures	Comparison group	QUEST Futures	Comparison group
	N = 131	N = 252[a]	N = 118	N = 248
1. Specific DPS flags				
Mania[b,e]	29.5%**	46.4%	39%	41%
PTSD[b,f]	27.9%+	38%	33%	35%
Any substance abuse[f]	26%*	38.5%	31%	33%
ODD[b,f]	18.0%***	35.2%	27%	25%
Marijuana abuse[e]	22.8%+	31.0%	25%	26%
Conduct disorder[b,f]	18.0%*	29.6%	25%	23%
Social phobia[c,f]	16.9%	20%	22%	18%
Suicide[e]	14.2%	14.3%	19%	12%
ADHD[b,f]	13.90%	22%	18%	19%
Separation anxiety[c,g]	13.7%	18.8%	17%	16%
Eating disorder[b,f]	13.1%	16.4%	15%	17%
GAD[c,g]	11.3%	14%	14%	13%
Alcohol abuse[e]	9.4%	12.3%	10%	10%
Specific phobia[c,g]	8.9%***	24.4%	13%	13%
Other substance abuse[d]	6.9%	7.1%	10%	5%
Panic disorder[c,g]	6.5%	9.6%	8%	8%
Agoraphobia[c,g]	5.6%+	11.2%	8%	7%
MDD[b,f]	3.70%	13.4%	11%	14%
OCD[b,f]	1.6%*	8%	2%	2%
2. Summary Measures				
Mean impairment score (SE)	5.4 (3.2)***	6.6(2.8)	6.2 (0.7)	6.5 (0.5)
Mean symptoms score (SE)[e]	7.2 (4.9)**	9.8 (4.8)	8.5 (0.9)	9.0 (0.7)
More than one flag	43.6%***	61.5%	51%	58%

* $p < .05$, ** $p < .01$, *** $p < .001$.

[a] Comparison sample excludes 9 QUEST ATD youth who were screened using the MAYSI-2.

[b] Unadjusted: N_{Quest}= 122; $N_{comparison}$=250; [c] Unadjusted: N_{Quest}= 124; $N_{comparison}$=250;

[d] Unadjusted: N_{Quest}= 130; $N_{comparison}$=252; [e] Adjusted: N_{Quest}= 114; [f] Adjusted: N_{Quest}= 109; [g]Adjusted: N_{Quest}= 111.

Sensitivity Analyses

In order to ensure that study findings were attributable to QUEST Futures participation and not potential differences in each borough in the main effects analyses (where Queens, Brooklyn, and Staten Island may process cases differently), we conducted the following sensitivity analyses.

Borough Correction Factor

To create a correction factor that would control for potential borough differences in outcomes, we obtained aggregate data for each outcome between October 2008 and June 2012 (*i.e.,* the data collection period). For example, the overall percentage of any re-arrest after one year post-arraignment was 13% in Queens, 23% in Brooklyn, and 16% in Staten Island. We examined overall differences in each outcome and determined that the following outcomes should be tested for borough differences: re-arrests at one year after arraignment, including any re-arrest, any felony re-arrest, any violent re-arrest, and any violent felony re-arrest; and several case disposition outcomes, including probation, placement, adjournment in contemplation of dismissal, and whether the case was dismissed or withdrawn. For each of these outcomes, we created a borough correction factor, based on the overall percentages from the aggregate borough data (*e.g.,* for any re-arrests at one year after arraignment, the borough correction factor was 0.13 in Queens, 0.23 in Brooklyn, and 0.16 in Staten Island). For each outcome listed above, we entered both the propensity score and the borough correction factor as covariates to control for potential borough differences. In general, findings tended to drop out of significance when adding the borough correction factor as a covariate, but the raw differences in outcomes were not substantially changed. Since the general borough correction factor was not based on actual cases in our study, but on aggregate outcomes for each borough, we ultimately decided that we lacked sufficient evidence to change our analytic plan.[16]

Comparison Subgroup Test

To test for potential differences by borough, we also ran analyses comparing youth from each of the three boroughs in the comparison group, consisting of the 21 Queens QUEST ATD youth, the 179 Brooklyn ATD youth, and the 61 Staten Island ATD youth. We first tested for any differences between background characteristics (*e.g.,* demographics and initial criminal justice data) and mental disorders among the three boroughs. We then tested for any differences between the boroughs in all outcomes, where significant differences were seen for probation, other community-based dispositions, and detention days (see Appendix C, Table 1). We then conducted multivariable analyses to test for whether borough of origin remained a significant predictor of any outcomes, after controlling for other individual-level characteristics of each youth—*i.e.,* characteristics that our propensity score adjustments had already taken into account. Once other individual-level characteristics were included, the effect of borough dropped out of significance for all outcomes except for the use of probation and other community-based dispositions (see Appendix C, Table 1). As a result, we conducted additional analyses to account for the effect of borough differences on all dispositions outcomes, as described below.

Borough Adjustment Score

Specifically, we calculated a borough adjustment score that would correct for potential borough differences. To create a borough adjustment score, we proceeded as follows. With just the comparison sample, we entered all significant predictors, including the borough variable, into

[16] Results from these analyses are not shown but are available upon request.

regression models for the probation outcome. We then used the regression results to compute a predicted probability for the outcome for the final sample. This predicted probability, in effect, adjusted for the combined effect of borough and other characteristics in leading some individuals—regardless of their participation in QUEST Futures—to be inherently more likely than others to receive a probation disposition. As a practical matter, the predicted probabilities constituted a borough adjustment score for probation dispositions. We then entered both the original propensity score and the outcome-specific borough adjustment score as covariates to control for potential borough differences (see Appendix D, Table 1).

Because we found a significant change in the substantive nature of the findings for the impact of Quest Futures participation on probation dispositions when controlling for the borough adjustment score, we chose to use the probation borough adjustment score in final analyses and to create additional borough adjustment scores for each other disposition outcome to include as additional covariates in the applicable final impact models.

The borough adjustment score for each disposition outcome accounts for any differences in borough practices. For example, without borough adjustment, QUEST Futures participants appear significantly more likely than the comparison group to receive a probation disposition. However, this is actually a reflection of the Queens borough being more likely to use probation. Using the borough adjustment score, the true effect of QUEST Futures on probation, where treatment participants receive significantly fewer probation dispositions, can be detected (see Appendix D, Table 1). For final study results, see Chapter 3.

Chapter 3: Study Findings

Table 3.1 presents impact findings for key criminal justice outcomes. At one year following arraignment (essentially one year after program enrollment), QUEST Futures participants were significantly less likely than the comparison group to have a felony re-arrest (20% vs. 32%). QUEST Futures participants also averaged significantly fewer total re-arrests (0.59 vs. 0.91) and felony re-arrests (0.24 vs. 0.50) than the comparison group. At one year following disposition of the juvenile delinquency case, QUEST Futures participants were less likely than the comparison group to have a felony arrest (15% vs. 25%) and averaged fewer total felony re-arrests, but these results only approached significance ($p<.10$). Overall, although many effects did not reach statistical significance, 15 of 16 re-arrest outcomes trended in favor of the QUEST Futures sample. These results suggest that participation in QUEST Futures contributes to reduced recidivism, particularly with respect to felony level re-offending. Of note, the sample did not differ in warrants issued for failures to appear at scheduled court dates (15% in each sample).

For final juvenile delinquency case outcomes that were adjusted for borough differences (as described in Chapter 2), QUEST Futures participants were significantly *less* likely than the comparison group to receive a probation sentence (25% vs. 52%) but also were significantly *more* likely to receive other community-based dispositions (54% vs. 34%).[17] QUEST Futures participants were *more* likely to receive a disposition of placement (22% vs. 11%), though the latter finding only approached significance ($p<.10$). A disposition of placement includes both clinically driven residential treatment services and more traditional juvenile placement facilities. Among the QUEST Futures youth who received a placement disposition, 60% were placed in state-run juvenile facilities, 27% were placed in residential education and treatment programs, and 13% were placed in facilities run by nonprofits in campus-like settings. The reasons for placement (*e.g.,* program non-compliance or a new arrest) among both groups are unknown.

Though QUEST Futures and comparison youth were equally likely to be detained after ATD enrollment (44% vs. 45%), QUEST Futures youth served significantly *more* days in detention after ATD program enrollment than those in the comparison group (34.35 vs. 28.43). This effect remained whether or not the youth had been detained prior to ATD enrollment. These results are unexpected but could indicate that QUEST Futures participation had made the judge and other court players more aware of the challenges and complex service needs of QUEST Futures youth, leading them to be detained longer until appropriate community-based services were again in place. The reasons for detention (*e.g.,* program violation, such as breaking curfew, missing school or program appointments, or a new arrest) among both groups remain unknown.

As discussed in the process evaluation of QUEST Futures (see Henry, 2012), stakeholders in the planning process expressed deep concern that knowledge of their clients' mental health needs might increase the likelihood of detention or placement, if judges or presentment attorneys believed that mental health issues contributed to increased public safety risk or that young people

[17] Other dispositions include a dismissal, a conditional discharge (CD), an adjournment in contemplation of dismissal (ACD), which is an interim disposition that virtually always changes to a dismissal either six or 12 months later, depending on the charge), or "other" miscellaneous reasons, including a withdrawn petition, being returned from placement, receiving an extension of probation supervision, or being transferred or removed to criminal court.

would receive mental health services were provided in detention facilities. The planning team attempted to address these concerns by crafting strict information-sharing protocols that would protect client confidentiality. Further exploration of the placement and detention findings are necessary to determine what factors account for the differences in placement or detention outcomes between QUEST Futures participants and the comparison group.

Additional analyses were run using the same methods described above to detect any differences between voluntary QUEST Futures participants (N = 93) and the comparison group (N = 251) in the final sample. (Most QUEST Futures participants enroll voluntarily, but approximately 25% are court ordered.) The study findings for both treatment subgroups remained consistent and are reported in Appendix E.

Table 3.1. Average treatment effects of Quest Futures on outcomes (Adjusted Means)[a]

Outcomes	Quest Futures Treatment Group	Comparison Group
	N = 118	N = 248
1. Recidivism		
One Year after Arraignment[b]		
Any re-arrest	39%	48%
Any felony re-arrest	20%*	32%
Any violent re-arrest	24%	26%
Any violent felony re-arrest	19%	17%
Average no. of re-arrests	0.59*	0.91
Average no. of felony re-arrests	0.24*	0.50
Average no. of violent re-arrests[c]	0.30	0.41
Average no. of violent felony re-arrests[d]	0.21	0.26
One Year after Disposition[e]		
Any re-arrest	32%	37%
Any felony re-arrest	15%+	25%
Any violent re-arrest	18%	21%
Any violent felony re-arrest	12%	15%
Average no. of re-arrests	0.56	0.71
Average no. of felony re-arrests	0.24+	0.41
Average no. of violent re-arrests[c]	0.22	0.29
Average no. of violent felony re-arrests[d]	0.15	0.20
2. Warrants		
Any warrants issued	15%	15%
3. Juvenile Delinquency Case Outcomes[f,g]		
Probation	25%*	52%
Placement	22%+	11%
Adjournment in contemplation of dismissal, Conditional Discharge, Dismissed, or Miscellaneous[h]	51%*	34%
4. Detention time[i]		
Any detention served	44%	45%
Average days in detention	34.35*	28.43
Number of detention admissions	0.96	1.02

+p<.10, *p<.05. [a] Smaller sample sizes are due to missing outcomes data. [b] N_{Quest}= 106; $N_{comparison}$=203. [c] See *Note* 11. [d] See *Note* 12. [e] NQuest= 108; $N_{comparison}$=215. [f] N_{Quest}= 108; $N_{comparison}$=204. [g] Results are reported after controlling for borough adjustment score, as well as propensity score, the latter of which is a covariate in all analyses. [h] Dismissed dispositions (N = 54) include petitions that are dismissed for failure to prosecute, or dismissed with or without prejudice; miscellaneous dispositions (N = 41) include petitions that are withdrawn and "Other" dispositions (see *Note 10*). [i] Results control for any pre-ATD detention admissions and propensity score.

Additional Predictors of Criminal Justice Outcomes

Table 3.2 presents independent variables that were significantly associated with recidivism, while Table 3.3 presents variables significantly associated with select case dispositions and detention days served post-ATD program enrollment. As shown in Table 3.2, significant predictors of any re-arrest one year after arraignment were male sex, screening for any substance use disorder *or* ODD. In contrast, screening for suicide risk predicted a lower probability of re-arrest (see Reich 2013 for a replication and discussion of this finding based on a larger sample). Significant predictors of any felony re-arrest included screening for any substance use disorder, scoring as high risk on the RAI, and felony (vs. misdemeanor) charge at initial arrest. At one year after disposition, patterns were broadly similar, except that the impact of screening for ODD at baseline lost significance.

Table 3.2. Predictors of Recidivism Post-arraignment and Post-disposition[a,b]

Predictors	Outcomes			
	Re-arrest at One-Year Post-arraignment		Re-arrest at One-Year Post-disposition	
	Any Re-arrest	Felony Re-arrest	Any Re-arrest	Felony Re-arrest
	N = 302	N = 302	N = 314	N = 314
1. Demographics				
Female sex	-0.78**	-1.05**	-1.04***	-0.96*
Grade	0.17+	0.15	0.08	0.15
2. DPS Flags				
Any substance abuse	0.54*	0.82**	0.57*	0.49+
ODD	0.65*	0.44	-0.20	0.09
PTSD	-0.53+	-0.17	0.24	0.23
Suicide	-0.86*	-0.55	-0.89*	-0.71
3. Risk score				
High	0.66	1.22*	1.30*	1.78***
Moderate	0.37	0.39	0.73**	0.47
4. Criminal justice involvement				
Felony charge at initial arrest	0.18	0.79**	-0.18	0.44

+p<.10, *p<.05, **p<.01, ***p<.001.

[a] Smaller sample sizes are due to missing outcomes data. [b] Unstandardized regression coefficients are presented.

As seen in Table 3.3, youth who screened for ODD or scored as high- or moderate-risk were less likely than others to receive probation as their final case disposition, and conversely, those at high-risk were particularly likely to receive a placement disposition. Factors significantly associated with more detention days included a lower grade level, screening for a substance use disorder, ODD, or suicide; or if the youth had spent any time in detention before enrollment in the ATD program. As screening for suicide indicated a lower probability of re-arrest, the above average use of detention was an unexpected relationship.

Table 3.3. Predictors of Juvenile Delinquency Case Outcomes and Detention Days[a,b]

Predictors	Outcomes		
	Final Disposition		Detention Days
	Probation	Placement	
	N = 303	N = 303	N = 356
1. Demographics			
Female sex	0.31	0.40	-0.07
Grade	-0.07	-0.05	-0.29***
2. DPS Flags			
Any substance abuse	-0.09	0.56	0.37**
ODD	-0.60*	0.46	0.27*
PTSD	0.27	-0.21	-0.17
Suicide	0.20	0.32	0.42*
3. Risk score (low risk = reference)			
High	-0.79	1.19*	-0.13
Moderate	-0.85***	-0.04	0.08
4. Criminal justice involvement			
Initial Felony Charge	-0.01	0	-0.29*
5. Prior detention			
Detention before ATD enrollment	---	---	0.88***

*p<.05, **p<.01, ***p<.001.
[a] Smaller sample sizes are due to missing outcomes data. [b] Unstandardized regression coefficients are presented.

Chapter 4: Conclusion

This study presents findings from one of the first impact evaluations of a mental health intervention for youth under community supervision. We examined four research questions, outlined below with answers and a brief discussion of the results.

1. ***Re-Arrest*: Does participation in QUEST Futures reduce the likelihood of re-arrest?** These results indicate that QUEST Futures produces a substantial reduction in re-arrests. Although not all differences exceeded the statistical margin of error (in part reflecting the relatively low sample size), 15 of 16 re-arrest outcomes tended in favor of the QUEST Futures sample. Specifically, QUEST Futures participants were significantly *less* likely to have a felony re-arrest and averaged a lower number of felony re-arrests than the comparison group at one year after arraignment (approximately one year from ATD program start). At one year after disposition (approximately one year from ATD program end), QUEST Futures participants were still *less* likely to have a felony re-arrest and had a lower number of felony re-arrests than the comparison group, though these relationships were marginally significant.

2. ***Warrants*: Does participation in QUEST Futures reduce the likelihood of warrants issued for failure to appear in court?** There was no difference in the likelihood of warrants issued for QUEST Futures participants and the comparison sample. The percentage of warrants issued for failure to appear in court in both groups was low (15%).

3. ***Juvenile delinquency case outcomes*: Does participation in QUEST Futures affect case disposition outcomes?** QUEST Futures participants were *less* likely to receive a community-based probation disposition but *more* likely to receive other community-based dispositions, including dismissals, adjournments in contemplation of dismissal, and conditional discharges.

4. ***Detention*: Does participation in QUEST Futures reduce the use of detention?** Following ATD program enrollment, QUEST Futures participants were no more or less likely to be detained than the comparison group but, once detained, served significantly *more* detention days (a difference of 5.92 days) than the comparison group, even when accounting for any detention served prior to ATD program enrollment. These findings may indicate a greater awareness by judges and other court players of the complex service needs of QUEST Futures youth, leading them to be more likely to have extended detention stays until appropriate community-based services could be lined up.

5. ***Additional Predictors besides QUEST Futures Participation:* What factors are associated with recidivism and detention outcomes?** Additional factors significantly associated with any re-arrest at one year after arraignment included screening for substance abuse *or* screening for Oppositional Defiant Disorder (ODD). Additional factors significantly associated with more days spent in detention post-ATD enrollment included completing fewer grades in school, screening for ODD, *or* if the youth had spent any time in detention before enrollment in the ATD program. Of note, youth who

screened for suicidal ideation were significantly *less* likely than others to be re-arrested but were significantly *more* likely to serve more days in detention.

Study Strengths and Limitations

The study had several strengths. First, we implemented a strong quasi-experimental design using rigorous methods of propensity score adjustment to control for group differences and additional borough adjustments to account for differences attributable to borough of origin. Second, we used longitudinal data collected from a range of sources, where data quality was high (*e.g.*, with relatively limited missing data on key control variables). Third, the study benefited from a diverse sample of youth under community supervision, as well as a strong comparison group of ATD program participants from similar programs throughout New York City. Also notable, despite its frequent inclusion in statistical analyses of sentencing outcomes or treatment effects, race/ethnicity was not a significant predictor of any outcome examined in this study. Taken together, our findings add substantially to the existing literature.

The current study had three key limitations. First, while statistical adjustment strategies effectively accounted for observed differences between the samples on sociodemographics, initial criminal justice data, and mental health information, additional measures such as complete criminal justice histories, economic data (*e.g.*, family household income, parental education attained) and prior mental health treatment history were not collected. As a result, the samples may have varied on other key characteristics. Second, the study was not able to distinguish among types of placement dispositions for comparison group youth, which may include secure facilities run by the New York State Office of Children and Family Services, facilities run by non-profits that operate in more of a campus setting, and residential programs offering therapeutic or specialized educational services. In addition, the study did not include reasons for placement or detention outcomes in either group because the data was not available in the Juvenile Justice Database. Due to these limitations, there is not enough context regarding individual or group variations to understand reasons leading to placement dispositions and detention outcomes.

Third, this study focused exclusively on official juvenile justice outcomes: re-arrest, case dispositions, warrants, and detention served. The study did not examine key outcomes that might capture additional effects of the comprehensive model, such as changes in behavioral health status (*e.g.*, improvements in symptoms or impairment), or improvements in family functioning, youth engagement (*e.g.*, in school, relationships, and the community) and social support, based on youth self-report, parent/caregiver report, and staff report. Future research should incorporate outcomes beyond juvenile justice measures to capture the range of effects of mental health interventions for youth under community supervision.

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Appendix A: Bivariate Analysis for Propensity Score Adjustment

As discussed in Chapter 2, Table 1 presents the results of the bivariate analysis for propensity score adjustment with specific p-values for each comparison tested. The inclusion criterion was any p-value of .50 or less. Of note, we included all variables meeting the inclusion criterion, except for the combined risk score. In this case, we chose to include separate risk of failure to appear and risk of re-arrest variables instead, because both of these variables provided more information and both were collinear with the combined risk score. For the same reasons, alcohol and marijuana abuse variables were included over any substance abuse, which also met inclusion criterion. We did not include the variable indicating more than one DPS flag, because by including nearly all the DPS screens, we were accounting youth with more than one flag.

Table 1. Bivariate analysis for Treatment vs. Comparison Group Differences (p-values).

Variables	Unadjusted p-value	Adjusted p-value
1. Sociodemographics		
Age	0.30	0.88
Gender	0.15	0.63
Race/Ethnicity		
Black	0.04	0.28
Latino	0.003	0.62
Other	<0.001	0.23
White	0.02	0.84
Asian/Pacific Islander	0.005	0.90
Grade at program enrollment	0.27	0.77
Primary adult caretaker	0.11	
Both parents	0.14	0.97
Mother only	0.10	0.93
Father only	0.09	0.85
Other family member or adult	0.78	0.95
2. Criminal Justice Information		
Risk Score		
Low	<0.001	0.87
Moderate	0.003	0.77
High	0.26	0.80
Risk of Failure to Appear (FTA)		
Low	0.40	0.92
Moderate	0.40	0.92
Risk of Re-arrest		
Low	<0.001	0.81
Moderate	0.006	0.70
High	0.26	0.80
Initial charge severity		
Misdemeanor charge	0.64	0.67
Felony charge	0.19	0.67
Violent felony charge	0.94	0.94
Initial charge type		
Misconduct/Minor charge	0.27	0.81
Drug charge	0.52	0.84
Weapons charge	0.21	0.49
Burglary, theft, or property charge	0.53	0.68

Variables	Unadjusted p-value	Adjusted p-value
Initial charge type cont.		
Sex crimes charge	0.23	0.99
Assault, robbery, or harm to persons charge	0.26	0.51
3. Mental Health Variables		
Specific DPS flags		
Mania	0.002	0.68
PTSD	0.054	0.77
Any substance abuse[a]	0.015	0.72
ODD	0.001	0.76
Marijuana	0.10	0.85
Conduct disorder	0.017	0.73
Social phobia	0.48	0.47
Suicide	0.98	0.12
ADHD	0.065	0.93
Separation anxiety	0.22	0.88
Eating disorder	0.41	0.75
GAD	0.47	0.78
Alcohol abuse	0.41	0.95
Specific phobia	<0.001	0.97
Other substance abuse	0.94	0.13
Panic disorder	0.31	0.89
Agoraphobia	0.08	0.73
OCD	0.015	0.55
MDD	0.20	0.92
Summary Measures		
Total Impairment Score	<0.001	0.93
Total Symptom Score	<0.001	0.70
More than one flag[a]	<0.001	0.24

[a] Not included in the propensity score adjustment.

Appendix B: Complete Variable List of Propensity Score Models

As outlined in Chapter 2, Table 1 presents all variables included in propensity score models.

Table 1. Complete List of Variables included in Propensity Score Models

Variables Included in Model 1	Variables included in Model 2[a]

• Age
• Sex
• Race/ethnicity
• School grade
• Primary adult caregiver
• Risk of failure to appear
• Risk of re-arrest
• Initial charge type
  ○ Misconduct/Minor charge
  ○ Weapons charge
  ○ Sex crimes charge
  ○ Assault, robbery, or harm to persons charge
• Initial charge severity
  ○ Felony charge
• Mania
• PTSD
• Any substance abuse
• ODD
• Marijuana
• Conduct disorder
• Social phobia
• ADHD
• Separation anxiety
• Eating disorder
• GAD
• Alcohol abuse
• Specific phobia
• Panic disorder
• Agoraphobia
• Agoraphobia
• MDD
• Total Impairment Score
• Total Symptom Score
	• Age
	• Sex
	• Race/ethnicity
	• Risk of failure to appear
	• Risk of re-arrest
	• Initial charge severity
	  ○ Felony charge

[a] Model 2 included variables with complete data only.

Appendix C: Comparison Subgroup Analysis Testing for Borough Differences

As outlined in Chapter 2, Table 1 presents results from the sensitivity analyses conducted among comparison group participants with select outcomes. As seen in Table 1, Model 1 demonstrates the impact of borough on each outcome, and Model 2 demonstrates the impact of borough in multivariable models that includes several predictors of each outcome.

Table 1. Borough differences in select outcomes among comparison group participants[a]

Predictors	Outcomes			
	Final Disposition			Detention Days
	Probation	Placement	ACD/CD/ Dismissed/ Miscellaneous	
1. Model 1: Borough only	N = 204	N = 204	N = 204	N = 248
Borough (Queens = reference)				
Brooklyn	-2.11***	0.92	1.84**	-0.56**
Staten Island	-1.34*	1.58	0.70	-0.73*
2. Model 2: Multivariable	N = 204	N = 204	N = 204	N = 247
Borough (Queens = reference)				
Brooklyn	-2.23***	0.95	1.94**	-0.42
Staten Island	-1.54*	1.47	0.96	-0.36
Female sex	---	---	---	0.28*
Grade	---	---	---	-0.26***
Risk score (Low = reference)				
High	-0.53	1.32*	-0.64	---
Moderate	-0.58+	-0.01	0.52	---
Risk of re-arrest (Moderate/high = reference)				
Low	---	---	---	0.24+

+p<.10, *p<.05, **p<.01, ***p<.001.

[a]Unstandardized regression coefficients are reported.

Appendix D: Borough Adjustment Score Accounting for Borough Differences

As discussed in Chapter 2, Table 1 presents the results of the sensitivity analyses conducted with juvenile delinquency case dispositions with and without the borough adjustment scores. All results include the propensity score adjustment.

Table 1. Average treatment effects of Quest Futures on juvenile delinquency case outcomes, with and without borough adjustment scores

Outcomes	Quest Futures Treatment Group	Comparison Group
	N = 108	N = 204
1. Juvenile Delinquency Case Outcomes		
Probation	59%*	44%
Probation with borough adjustment	25%*	52%
Placement	17%	13%
Placement with borough adjustment	22%+	11%
Adjournment in contemplation of dismissal, Conditional Discharge, Dismissed, or Miscellaneous	29%**	49%
Adjournment in contemplation of dismissal, Conditional Discharge, Dismissed, or Miscellaneous with borough adjustment	54%*	34%

+p<.10, *p<.05, **p<.01.

Appendix E: Voluntary Subgroup Analysis

As discussed in Chapter 3, Table 1 presents the results of the subgroup analyses conducted with the voluntary QUEST Futures participants vs. the comparison group.

Table 1. Average treatment effects of voluntary Quest Futures participants on outcomes (Adjusted Means)[a]

Outcomes	Voluntary Quest Futures	Comparison Group
	N = 93	N = 251
1. Recidivism		
<u>One Year after Arraignment</u>[b]		
Any re-arrest	35%$^{+}$	49%
Any felony re-arrest	16%**	34%
Any violent re-arrest	20%	27%
Any violent felony re-arrest	15%	18%
Average no. of re-arrests	0.54*	0.94
Average no. of felony re-arrests	0.18**	0.50
Average no. of violent re-arrests[c]	0.25^{+}	0.42
Average no. of violent felony re-arrests[d]	0.14^{+}	0.26
<u>One Year after Disposition</u>[e]		
Any re-arrest	33%	37%
Any felony re-arrest	12%*	25%
Any violent re-arrest	19%	20%
Any violent felony re-arrest	10%	14%
Average no. of re-arrests	0.59	0.70
Average no. of felony re-arrests	0.20*	0.39
Average no. of violent re-arrests[c]	0.21	0.26
Average no. of violent felony re-arrests[d]	0.12	0.18
2. Warrants		
Any warrants issued	18%	15%
3. Juvenile Delinquency Case Outcomes[f,g]		
Probation	24%*	50%
Placement	23%$^{+}$	12%
Adjournment in contemplation of dismissal, Conditional Discharge, Dismissed, or Miscellaneous	49%	37%
4. Detention time[h]		
Any detention served	45%	46%
Average days in detention	41.01*	29.67
Number of detention admissions	0.98	1.07

$^{+}$p<.10, *p<.05. [a] Smaller sample sizes are due to missing outcomes data. [b] N_{Quest}= 85; $N_{comparison}$=208. [c] See *Note* 11. [d] See *Note* 12. [e] N_{Quest}= 87; $N_{comparison}$=217. [f] N_{Quest}= 87; $N_{comparison}$=207. [g] Results are reported after controlling for borough adjustment score, as well as propensity score, the latter of which is a covariate in all analyses. [h] Results control for any pre-ATD detention admissions and propensity score.